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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/678,728	10/04/2000	Yat-Tung Lam	MP0042	6746
23624	7590	12/14/2004	EXAMINER	
MARVELL SEMICONDUCTOR, INC. INTELLECTUAL PROPERTY DEPARTMENT 700 FIRST AVENUE, MS# 509 SUNNYVALE, CA 94089			MAI, TAN V	
			ART UNIT	PAPER NUMBER
			2124	

DATE MAILED: 12/14/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/678,728	LAM, YAT-TUNG	
	Examiner	Art Unit	
	Tan V Mai	2124	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 15 September 2004.
 2a) This action is FINAL. 2b) This action is non-final.
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-46 is/are pending in the application.
 4a) Of the above claim(s) 19-46 is/are withdrawn from consideration.
 5) Claim(s) _____ is/are allowed.
 6) Claim(s) 1,2 and 7-18 is/are rejected.
 7) Claim(s) 3-6 is/are objected to.
 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) Notice of References Cited (PTO-892)
 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
 Paper No(s)/Mail Date 3/16/01.
- 4) Interview Summary (PTO-413)
 Paper No(s)/Mail Date. _____.
 5) Notice of Informal Patent Application (PTO-152)
 6) Other: _____.

Art Unit: 2124

1. Applicant's election without traverse of Group II, Species IIa (claims 1–18) in Paper No. filed 9/15/2004 is acknowledged.

2. Claims 8-11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The claim language is vague and indefinite. For instance, although the preamble of independent claim 8 claims **an FIR filter**, the claim fails to recite the necessary detail physical structures to perform the recited function(s) nor are there any recitation describing how such an apparatus (or elements) is actually provided in the **FIR filter**. Sufficient detail apparatus or elements must be recited to adequately describe and constitute the proposed **FIR filter**. The claims are incomplete in that they recite only a portion of the methodology required for the **FIR filter** to become operational, i.e., they omit essential elements and/or steps. See MPEP 2172.01.

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-2 and 7-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakase et al.

As per independent claim 1, Nakase et al disclose, e.g., see Fig. 1, the invention substantially as claimed, including: an **input a** [which is divided into a plurality of portions **a₁, a₂, ...a_m**], **FIR filter** comprising a plurality of filter stages **611, 612, ... 61m**, and a plurality of **shift registers 12**. It is noted that Nakase et al do not specifically detail the claimed **delay**; however, the plurality of **shift registers 12** are capable of providing the equivalent function of the claimed **delay**. It would have been obvious to a person having ordinary skill in the art at the time the invention was made to design the claimed invention according to Nakase et al's teachings because the device is an FIR filter having a plurality of filter stages as claimed.

As per dependent claim 2, the claim adds "wherein the delay of said delay is adjustable". Nakase et al do show the equivalent feature, e.g., see col. 12, lines 9-12, "... a part of a shift register 101 and tap selection circuit 401 can be treated as a variable delay line 102 ..."

As per claims 7-11, 13, due to the similarity of claims 7-11 to claim 2, they are rejected under a similar rationale.

As per independent claims 12 and 17-18, due to the similarity of claims 12 and 17-18 to claim 1, they are rejected under a similar rationale.

As per independent claims 14-15, the claim add "first / second plurality of **LMS engines**" features. These features are well known in the FIR adaptive filter.

As per dependent claim 16, the claim adds the detail of said first plurality of LMS engines. The feature is obvious to a person having ordinary skill in the art.

5. Claims 3-6 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Cited references are art of interest.

7. *The following is an examiner's statement of reasons for allowance: the recorded references do NOT teach or suggest the FIR filter having the claimed "said delay providing a **variable** second portion of the input signal" feature as recited in dependent claim 3.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tan V. Mai whose telephone number is (571) 272-3726. The examiner can normally be reached on Tue-Fri from 6:30am to 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kakali Chaki, can be reached on (571) 272-3719. The fax phone number for the organization where this application or proceeding is assigned is:

Official (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.



TAN V. MAI
PRIMARY EXAMINER